

W5YI

National Volunteer Examiner Coordinator

REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable. May be reproduced providing credit is given to The W5YI Report.

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SAREX II - A QUIET SUCCESS

Without the amateur radio community fanfare that accompanied the spaceflights of *Dr. Owen Garriott/W5LFL* in 1983 (STS-9/Columbia) and *Dr. Anthony England/W0ORE* in 1985 (STS 51F/Challenger), another ham/astronaut, *Dr. Ron Parise/WA4SIR* finally made it into space at 06:49 AM UTC on Sunday morning December 2nd.

Six months and 21 minutes late, the shuttle *Columbia* rose on a 700 foot pillar of flame and took to the sky. It was a dramatic nighttime launch from the Kennedy Space Center at Cape Canaveral, Florida. Newspapers described it as a "festival of light" easily seen up the coast for several hundred miles.

The STS-35 flight marked the return to space of the trouble plagued orbiter. The oldest of the United States shuttle fleet, *Columbia* has been bothered with leaks in its Hydrogen fuel system delaying the STS-35 mission several times.

Ron, an astronomer, is a payload specialist with the STS-35 ASTRO-1 mission and working on the "Red" team from about 0319 UTC to about 1534 UTC each day. Voice operation and school interview sessions of the Shuttle Amateur Radio Experiment (SAREX) was conducted during his pre-sleep and post-sleep periods when he is off duty ...with automatic packet ROBOT operation occurring during his working shift.

In an unprecedented coincidence, a group of cosmonauts including *Musa Manarov/U2MIR* was launched to Mir, the Soviet space station on the

same day as the STS-35 launch. A record twelve people were now in earth orbit.

Unfortunately, the craft carrying U2MIR to Mir was in the midst of rendezvous and docking operations during the communications opportunity and Musa was not available to attempt a QSO with WA4SIR. Another opportunity exists near the end of the STS-35 mission for direct amateur radio operation between the two space vehicles.

Amateur Operation Aboard STS-35

SAREX operations mission day "0" -- Monday December 3 at about 02:00 U-T-C when *Ron Parise WA4SIR* un-stowed the station gear, set it up and began making contacts. Since the STS-35 launch was 21 minutes late, occurring at 0649 UTC rather than the opening of the launch window at 0628 UTC on 2 December 1990, all "Mission Elapsed Time" (MET) events in the timeline occurred 21 minutes later than scheduled.

The first attempt at a contact was made at 02:25 when Ron was scheduled to talk to a series of stations in the United States and Australia. The VK's reported very weak FM voice and he was not heard well either in the United States. This was due to the attitude of the shuttle with respect to earth and positioning of the SAREX antenna system.

Most of the communications problems resulted from the 2 meter antenna being aimed in a

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different direction than during previous missions to support the astronomy experiments (i.e., paying customers.) Amateur coverage ranged between good and poor from moment to moment.

Similar problems were experienced with the packet robot experiment. On any given pass during which the robot is active, signals from (and presumably to) space were sometimes excellent and moments later were very poor or undetectable.

The SAREX control team verified, through use of their Mission Control liaison, that periods of poor communication correspond to periods of poor antenna orientation. The problems are aggravated by the capture effect of FM and squelch settings on radios on both ends.

Usually shuttles fly upside-down with respect to earth with the flight-deck windows facing groundward. STS-35 being a space science mission meant that the shuttle would be orbiting with its belly toward the earth so that the ASTRO-I telescopes could peer into space. Since the SAREX antenna is fitted into a flight deck window, its signals were radiating primarily toward the heavens as well.

After the initial tests, the SAREX evaluation team at the Johnson Space Center in Houston Texas began an evaluation of the problem and within 12 hours came up with some suggestions that might help improve Ron's signals to the ground stations. While nothing could be done to change the shuttle attitude, ideas from the Houston-based SAREX team were passed up to Ron on regular NASA com channels and implemented.

The next test -- a prelude for the first of numerous contacts with children in classrooms around the world showed a definite improvement. The scheduled sessions with school children were distributed using the Darome Connection teleconference bridge and re-transmitted on HF by amateur radio club stations at NASA centers all over the U.S.

The ham radio "tracking and relay" system was made necessary because of the orbital inclination of *Columbia* -- about 28 degrees -- north to south - south to north -- of the equator. This meant that only ground stations in the southern part of the northern hemisphere and northern part of the southern hemisphere had the ability to reach the spacecraft direct.

School Sessions Via Ham Radio

To expand communications further and bring it into the schools, **Roy Neal/K6DUE** (retired - NBC News) who heads up the SAREX Working Group conceived the idea of linking a band of equatorial stations who could routinely contact WA4SIR to SAREX Control and then to the schools using a modified version of the *National Teleconference Radio Network*.

Time was made available by the *Darome Connection* who donated its international bridge in Chicago and manned the telephone interconnect. The full duplex system very much resembled the old NASA Ground Tracking system used to keep in touch with space shuttles before the launch of the Tracking and Data Relay Satellites (TDRS). It worked very well with relay points in Australia, Brazil and the United States!

School Session "0" conducted at 0316 UTC on December 3 did not involve any school participants, but was a test of the telephone bridge during a shuttle pass over Australia. Ground stations VK6IU in Carnarvon, VK5AGR in Adelaide, and VK2AS in Sydney all participated.

WA4SIR aboard the shuttle was not heard during this session although the SAREX equipment was known to be operating, as Ron had conducted a QSO with NZ8W on an earlier pass over Florida.

Session "1" conducted at 1711 UTC on December 3 was a partial success as PY2BJO made several attempts to establish solid contact with WA4SIR during a pass over Brazil. This was before the SAREX team had sent its signal improvement ideas up to WA4SIR.

Session "2" conducted at 1600 UTC on December 4 was a success as PY2BJO phone-patched student questions from KK9T, WA5TET, and WB4TGB during the 9 minute pass.

Session "3" conducted at 0231 UTC on December 4 was a major success as the trio of ground stations in Australia relayed questions and answers from WA4SIR to students in four states coordinated by W6BYE, N7NHM, WB5OAP, and WA4GSS. This session lasted nearly 20 minutes. The interplay between spacecraft and classroom set a new standard in education. For the first time, students in their classrooms were able to talk directly to a astronaut in space.

I am a currently licensed Extra Class amateur radio operator and wish to be a volunteer examiner. I have never had my station or operator license revoked or suspended. I do not own a significant amount of equipment.

WOULD YOU LIKE TO BECOME A VOLUNTEER EXAMINER?
If so, please send a copy of the W5YI Report to: "The W5YI Report", P.O. Box 1000, Waco, TX 76788. If you send the following signed statement, and a SASE your Extra Class license, the following signed statement, and a SASE

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Questions posed to WA4SIR included: "How far can you see from the shuttle?" Ron's gave a comprehensive response dealing with both out the window and through the ASTRO-1 complement of telescopes. Additional questions were:

- "What will astro find out about Supernova 1987-A?"
- "How does the Astro instruments compare with the Hubble space telescope?"
- "What emergency systems does the shuttle have for life support?" Ron dealt with meteor and space junk impacting and penetrating the shuttle in this answer.

AMSAT-NA Education Advisor Rich Ensign, was listening in to the space-to-school sessions. After several of these, Rich issued a note via the telemail system that said in part: "We hope the quality stays up like this for the rest of the mission. Great work folks!!!!!!" Actually the ham operation was going better at this point than the ASTRO-1 astronomy experiments which were crippled by computer failures. But it didn't last.

Session "4" ran for about ten minutes at 1620 UTC on 5 December 90. No contact was made between PY2BJO and WA4SIR but questions were taken from school participants for relay to Ron at a later time.

During session "5," relay stations in Australia had difficulty maintaining contact with WA4SIR starting at about 0257 UTC on 6 December 90 and little exchange with students occurred. Ron was, however, able to give a general report on his activity before LOS occurred at VK2AS in Sydney.

Again, session "6" was not succesful as PY2BJO called repeatedly to no reply starting around 16:52 UTC on 6 December 90.

Session "7" was more succesful as Columbia passed over Australia beginning around 0146 UTC on 7 December 90. Questions were relayed from school groups coordinated by WA5NVB, AA5NT, and N3CXP.

The teacher-in-space concept also included groups of youngsters at two NASA centers asking questions using non-amateur frequencies. If the school contacts made education history then the packet radio system made ham radio history.

Robot Packet Operation

As of the December 7, over 1,000 robot packet connect serial numbers had been issued to ground stations attempting to connect. Packeteers were urged to transmit only on the uplink frequency of 144.95 MHz and to call only when the robot downlink was heard on 145.55 MHz to minimize PacketCluster interference.

Packet robot operation used standard AX.25, 1200 baud, AFSK, FM. The high QSO count provided proof that the digital communication mode was far superior to analogue voice in marginal signal situations.

Stations as far north as Palos Verdes California made two-way "connects" with WA4SIR, and the amateur station at the Fox Television Center in Hollywood was able to copy his downlink signal on 145.55 MHz through the constant ignition noise generated on the adjacent Hollywood Freeway.

Packet ROBOT operations were anticipated every day beginning shortly after 0300 UTC and ending around 1545 UTC through 10 or 11 December depending on the duration of the total mission.

Radio amateurs and Short Wave Listeners had many opportunities to listen to all the onboard activities from the Shuttle Columbia as the astronauts performed their planned scientific experiments and investigations with the ASTRO-1 payload. HF Bulletin Stations relayed mission audio from the "NASA SELECT" satellite feed. Hundreds of VHF and UHF repeaters supplanted normal relay operation to provide satellite audio as well. (Thanks to AMSAT-NA, Bob Myers/W1XT, Bill Pasternak/WA6ITF and the Fox Employees ARC for contributing information to this story.)

ARRL, AMSAT CONCERNED ABOUT WARC '92

The American Radio Relay League (ARRL) and the Radio Amateur Satellite Corp. (AMSAT) are registering concern over the fate of amateur spectrum at the 1992 World Administrative Radio Conference (WARC-92). This conference of the International Telecommunication Union will be able to modify allocations in several key parts of the spectrum. Proponents of new radio services are anxious about WARC-92, where mobile satellites, digital pocket phones, and digital audio

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broadcasting (DAB) are a few of the new services to be considered.

In comments filed with the FCC, ARRL supports the proposed 40 meter amateur reallocation to 6900-7200 kHz worldwide. The Amateur Service would have exclusive access to the 7000-7200 kHz segment, and primary access to 6900-7000 kHz with secondary access available to land mobile radio.

"While amateurs would suffer some inconvenience and incur some costs as a result of a downward shift in the band of 100 kHz," ARRL said, "such would be more than offset by the greater use that could be made of the band in the absence of higher-powered broadcasting stations."

Low-Earth issues

The FCC's *Second Notice of Inquiry* in WARC-'92 proposed to internationally allocate 148-149.9 MHz on a secondary basis to low-Earth orbit (LEO) satellites. Amateurs pioneered LEO satellites, and now several organizations have applied to the FCC for LEO licenses.

Assuming that the emissions are strictly confined to this band, the allocation would not be expected to interfere with ham operations in 144-148 MHz (Regions 2 and 3) and 144-146 MHz (Region 1 and also Amateur Satellite Service). For a primary, exclusive LEO allocation, the FCC is looking to 420-421 MHz for downlinks. The band 420-430 MHz is allocated to Amateur Radio on a secondary basis, and the main use of 420-421 is amateur TV.

ARRL opposes this proposal, but said it would be less objectionable if LEOs would use it as an uplink instead of a downlink, and if the satellite services are required to accept interference from existing services including amateur.

The FCC's proposed uplink for LEO is 930-931 MHz. This is not an amateur band. It is allocated to but has never been used by "advanced paging systems," and we expect a bitter fight over its future by entrepreneurs.

Late information tells us that some engineers believe that the 140 MHz bands may turn out to be quite suitable for LEO use for both up and downlinks. Thus, changes to 420 MHz may not be needed in the end.

A lot of BSS-S

One of the most infuriating proposals has been the FCC's idea concerning reallocation of 2390-2450 MHz. This band is allocated to Amateur Radio on a secondary basis. The 2400-2450 segment is allocated to the Amateur Satellite Service.

ARRL said that IARU statistics show worldwide annual amateur growth of 7%, which underscores the need to retain ham allocations in the 1-3 GHz range. AMSAT said that the 2400 MHz area is "...vital to the development of future amateur satellites." The organization explained that in addition to current and planned ham spacecraft that use the band, NASA's Space Station *Freedom* may use amateur satellites to transmit video to schoolchildren.

The FCC is under strong pressure from commercial interests who want to place a Digital Audio Broadcasting satellite in this or other spectrum. Domestic broadcasters are against BSS-S but some FCC decision makers are known to be supportive of the concept.

The FCC proposed to reallocate 2390-2450 MHz to the Broadcasting Satellite Service - Sound (BSS-S), delete the secondary amateur allocation there, and delete the 2400-2450 MHz from availability to amateur satellites.

The 2400-2450 MHz deletion would be "...most serious," according to ARRL, and would have "...immediate and long-term harmful effects on the Amateur Satellite Service. ...The absolute minimum requirement is for use of 10 MHz in the space-to-Earth direction for the Amateur Satellite Service. The band 2400-2410 MHz is preferred for this application."

AMSAT suggested that various other changes, such as sharing with aeronautical telemetry in the 2400 MHz band (opening up other spectrum for BSS-S) or a move of amateur satellite operations to the low end of 2300 MHz, might be acceptable alternatives.

AMSAT meets with FCC

Directors and technical personnel from AMSAT spent several hours with FCC staff in Washington recently. They made a presentation on the accomplishments of the amateur space program to Commissioner James Quello's top advisor and

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to the chiefs of the Personal Radio Branch and the Private Radio Bureau. Such a visit is timely, given the FCC's consideration of changes to amateur microwave spectrum as described above.

AMSAT director **Bob McGwier/N4HY** said the FCC personnel were surprised to learn about all that was being done in Amateur Radio technical development. Apparently, the FCC was so impressed with the AMSAT presentation that the time allotted to it was lengthened considerably.

AMSAT Public Program Scheduled

Even more exciting, FCC officials immediately scheduled a public program on amateur satellite communications, to be held at Commission headquarters in Washington on Jan. 11, 1991.

"There are now more than 30 satellites to have been launched into the Amateur Satellite Service, 17 of them by AMSATs in the U.S., U.K., and DL, two from Japan and the rest from USSR," N4HY said.

"They did not know that Amateur Radio had pioneered store and forward satellites and had the first store and forward satellite in orbit in the UOSAT-11 DCE (Digital Communications Experiment) which was built by people in TAPR and AMSAT-NA. (UOSAT-11 was built at the University Of Surrey).

"They did not know that almost every agency in the U.S. government that tracks satellites for any reason uses our software and that it is the worldwide defacto standard. We make \$125,000 per year toward technical projects with this.

"They did not know that we did the first test of SARSAT/COSPA (satellite search and rescue beacon satellite) through OSCAR 6. They did not know we had launched two satellites with communications transponders into elliptical orbits. They did not know that these were the most efficient linear communications transponders of any satellite in orbit anywhere. I could go on and on."

One FCC staff member told the AMSAT group, "We thought that all that went on in amateur radio was people fighting each other on 14.313 and sending their congressmen after special call signs."

"This is through no fault of theirs," N4HY observed. "It is incumbent on the users of the spectrum to come and tell what you are doing with the spectrum and your accomplishments."

AMATEUR RADIO CALL SIGNS

...issued as of the first of December 1990:

Radio District	Gp. "A" Extra	Gp. "B" Advan.	Gp. "C" Tech/Gen	Gp. "D" Novice
0 (*)	AA0CW	KF0OI	N0MRS	KB0HUQ
1	WN1M	KC1YL	N1IGM	KA1WSU
2 (*)	AA2CN	KE2YH	N2LKZ	KB2LOI
3	WG3V	KD3UY	N3ISG	KA3YBS
4 (*)	AC4AY	KN4TI	(***)	KC4UJV
5 (*)	AA5WC	KI5LS	N5RTX	KB5OFU
6 (*)	AA6ZU	KK6TN	(***)	KC6PPF
7 (*)	AA7GV	KG7KW	N7PXO	KB7MBI
8 (*)	AA8CR	KF8KO	N8NCU	KB8LBL
9	WX9M	KF9AG	N9KHY	KB9FSV
N. Mariana Is.	AH0J	AH0AG	KH0AM	WH0AAO
Guam	KH2O	AH2CI	KH2EV	WH2AMU
Johnston Is.	AH3D	AH3AD	KH3AE	WH3AAG
Midway Is.		AH4AA	KH4AE	WH4AAH
Hawaii	(**)	AH6KT	NH6XY	WH6CJP
Kure Is.			KH7AA	
Amer. Samoa	AH8D	AH8AE	KH8AI	WH8AAZ
Wake W. Peale	AH9A	AH9AD	KH9AE	WH9AAH
Alaska	(**)	AL7MP	NL7VP	WL7BZN
Virgin Is.	NP2I	KP2BV	NP2EB	WP2AHF
Puerto Rico	(**)	KP4RI	(***)	WP4JPM

CALL SIGN WATCH: *=All 2-by-1 call signs have been assigned in the 2nd, 4th, 5th, 6th, 7th, 8th and "0" radio districts where 2-by-1 format call signs from the AA-AK prefix block are now being assigned to Extra Class amateurs. (Other than DX, only the 1st, 3rd and 9th district have 2-by-1's left!)

**=All Group A (2-by-1) format call signs have been assigned in Hawaii, Alaska and Puerto Rico. Group "B" (2-by-2) format call signs are assigned to Extra Class when Group "A" are depleted.

***=Group "C" call signs have run out in the 4th, 6th area districts - and now Puerto Rico. According to the rules (adopted by the Commission Feb. 8, 1978, Docket No. 21135), Technician/General class amateurs are next assigned Group "D" (2-by-3 format) call signs when all Group "C" have been assigned. Upgrading Novice amateurs holding a 2-by-3 format call sign in the 4th, 6th and Puerto Rico call areas will no longer be able to request a Group "C" call and will be automatically assigned another more recent 2-by-3 format call sign if they do! The FCC has said they will not be going back and reassigning unused "K" and "W" 1-by-3 format call signs.

[Source: FCC, Gettysburg, Pennsylvania]

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OCTOBER VE PROGRAM STATISTICS

<u>October</u> <u>No. VEC's</u>	<u>1988</u> <u>*62</u>	<u>1989</u> <u>*18</u>	<u>1990</u> <u>*18</u>
Testing Sessions	465	512	536
<u>VEC</u> <u>1988</u>	<u>1989</u>	<u>1990</u>	
W5YI 33.3%	41.4%	45.0%	
ARRL 44.1	35.2	36.0	
CAVEC 5.6	5.7	4.1	
DeVRY 5.2	5.7	3.5	
Others (14) 11.8	12.1	11.4	
Year-to-Date Sessions	4054	4540	5014

Elements Administ.	6758	7454	8206
<u>VEC</u> <u>1988</u>	<u>1989</u>	<u>1990</u>	
ARRL 52.6%	44.0%	40.0%	
W5YI 27.5	31.8	39.1	
CAVEC 4.9	6.4	5.0	
DeVRY 3.6	4.5	4.8	
Others (14) 11.4	13.3	11.1	
Year-to-Date Elements	75946	80598	86758

Applicants Tested	4155	4613	5132
<u>VEC</u> <u>1988</u>	<u>1989</u>	<u>1990</u>	
ARRL 52.5%	42.9%	39.8%	
W5YI 27.6	32.5	39.4	
DeVRY 4.2	5.2	5.4	
CAVEC 4.5	5.6	4.2	
Others (14) 11.2	13.8	11.2	
Year-to-Date Tested	45490	48265	53048

<u>October</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Pass Rate - All	59.6%	62.0%	60.5%
Upgrade Rate - W5YI	51.8	54.4	59.3
Applicants/Session	8.9	9.0	9.6
Appl./Session W5YI	7.3	7.0	7.8
Elements/Applicant	1.6	1.6	1.6
Sessions Per VEC	25.8 (*)	28.4	29.8

Administrative Errors by VE's/VEC's

<u>October</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Defect. Applications	0.6%	0.4%	1.0%
Late Filed Sessions	0.7%	1.2%	1.5%
Defective Reports	1.1%	0.4%	0.6%

(*) Note: The FCC previously considered ARRL, W5YI and DeVry to be 13 VEC's each since VEC's initially were appointed on a regional basis. Since any VEC may now coordinate examinations in any region, the FCC reduced the number of VEC Regions (62) to VEC Organizations (18.) We have adjusted 1988 figures to reflect this change.

[Source: Personal Radio Branch/FCC; Washington, D.C.]

OCTOBER AMATEUR LICENSING STATISTICS

<u>October</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
New				
Amateurs:	1002	923	1811	1826
Upgrading:				
Novices	1103	953	1454	1456
Technicians	362	356	533	810
Generals	323	307	357	620
Advanced	<u>236</u>	<u>257</u>	<u>288</u>	<u>325</u>
Total:	2024	1873	2627	3211

Renewals: (*)

Total Renew:	2851	2120	* 193	* 63
Novices	179	185	* 29	* 9

Purged: (*)

Total Dropped:	727	615	1175	1922
Novices	400	221	515	977

Census:

Indiv. Oper.	430746	436963	466971	495166
Change/Year	+11435	+6217	+30008*	+28195*

Individual Operators by Class: (and % of total)

<u>Extra</u>	<u>Advan.</u>	<u>General</u>	<u>Technic.</u>	<u>Novice</u>	<u>Total:</u>
October 1987					

43479	98287	114487	92267	82216	430646
10.1%	22.8%	26.6%	21.4%	19.1%	100.0%

October 1988

46413	98386	112954	100176	79034	436963
10.6%	22.5%	25.9%	22.9%	18.1%	100.0%

October 1989 (*)

49883	101725	116797	113786	84780	466971
10.7%	21.8%	25.0%	24.4%	18.1%	100.0%

October 1990 (*)

53219	104771	119393	126050	91733	495166
10.7%	21.2%	24.1%	25.5%	18.5%	100.0%

Club/

RACES &	(1987)	(1988)	(1989)	(1990)
Military:	<u>2412</u>	<u>2288</u>	<u>2462</u>	<u>2434</u>

Total Active:	433158	439251	469433	497600
% Increase	+2.7%	+1.4%	+6.9%*	+6.0%*

Adjusted Growth is actually a decrease!

(*) NOTE: The number of amateurs in 1989 and 1990 is not comparable with prior years. Due to the implementation of the 10-year term license in 1984, amateurs who would ordinarily be dropping out of the Amateur Service between 1989 and 1993 by not renewing will be carried on the amateur roles for another seven years before being purged from the FCC's data base. (Seven years = five plus two grace years.) This has the effect of greatly overstating the amateur census for 1989 and 1990 since the records of silent keys and non-renewals will not be deleted. The trend of negative growth in U.S. ham radio continues!

[Source: FCC Licensing Facility, Gettysburg, PA]

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FUTURE REALLOCATIONS ANNOUNCED

FCC Chairman Al Sikes announced Dec. 6 that the Commission will create a "spectrum reserve" out of currently-occupied frequencies, in order to stimulate economic activity. His message should be attended closely by radio amateurs.

Addressing a communications law seminar in Washington, Sikes explained that government and business must realize that many technologies of the 21st century will rely heavily on spectrum.

"To the extent that radio spectrum is not available to support new services and new production on the part of U.S. based companies, their competitiveness in offshore markets will be impaired," he said.

"If this resource is to be readily available to the innovators and entrepreneurs of tomorrow, we must prepare today. With this in mind, the FCC will begin an initiative next year to examine use in those ranges or bands which appear particularly amenable to emerging radio-based technologies. My ultimate goal will be to create a new spectrum reserve for emerging technologies.

"Almost 20 years ago, the FCC launched a similar initiative, and created a spectrum reserve in the 900 MHz range. [These frequencies were taken from UHF TV channels 70-83. -Ed.] Difficult as it was, that initiative made it possible for the FCC to authorize cellular radio, specialized mobile radio, air-ground services, as well as new public safety services.

"These actions...resulted in literally billions of dollars of new economic activity, tens of thousands of new jobs and investment opportunities, and helped fuel U.S. technological and commercial leadership. ...

"If we are to have sufficient spectrum to meet projected new technology needs, some of the incumbents will have to find new homes. The legitimate needs of existing licensees, however, must be considered, and transitional equities will be important. Any comprehensive program will have to be implemented over a period of years, and will require careful planning.

"The creation of a spectrum reserve will not be without costs. But the benefits to the public of facilitating new communications services will be dramatic."

Sikes made no mention of specific radio

services or frequencies. But according to reports, the FCC will focus on 1850-2200 MHz. These bands are mostly used for fixed microwave communications, and there are billions of dollars invested in equipment for such operations. Displaced licensees will have to either go to non-radio media, such as fiber optics, or will have to be reaccommodated -- placing pressure on users of other bands.

It is obvious that amateurs must quantify the economic benefit of Amateur Radio to the public, and must attract energetic talent into the service, in order to defend amateur spectrum in the years ahead.

FCC REFUSES PART 15 RECONSIDERATION

The Commission has denied an ARRL petition to reverse parts of the new Part 15 rules. Part 15 governs nonlicensed RF devices. ARRL believed that such devices have potential to cause interference to and receive interference from amateur stations, particularly under the changed rules.

The full text of the FCC's decision was not available at presstime. In a news release, the Commission said that it found no merit in ARRL's requests that emission limits for Part 15 devices in amateur bands be reduced or that the amateur bands be declared "restricted" to Part 15 devices. Numerous other bands have been declared restricted.

In an action sure to raise questions about the FCC's alleged "pro-consumer" philosophy, the agency said it also found no merit in ARRL's request that manufacturers of electronic products be required to provide interference resolution information to consumers.

■ **Two pirate radio operators who held FCC licenses have been fined** and had their licenses suspended. Frederick Stark and Joseph Della Barba were fined \$1,000 each. Stark was investigated after the New York State Broadcasters Association complained about his 1000 KHz transmissions. He holds a General Radiotelephone Operator License. Della Barba, who operated on the 15 and 25 MHz HF bands, holds a Restricted Radiotelephone Operator Permit. Both licenses have been suspended. The suspension depends on the outcome of hearings, if the operators request them.

■ On Nov. 15, FCC engineers from the Commission's Atlanta Facility and **U.S. Marshals seized four linear amplifiers and 11 CB transmitters** from the home of Ben Pitts of Duluth, Georgia after a lengthy investigation into Pitts' operations and neighborhood RFI.

■ **It's a wireless world!** The 902-928 MHz shared ham band will apparently be the major home of wireless LANs. Over-the-air Local Area Networks connect micro-computers together without the necessity of running expensive and bulky cabling. Range is about 1,000 feet. The **VeriFone TRANZciever** supports electronic payment processing and other transaction automation applications. NCR just introduced their **WaveLAN**. Cylink and O'Neil have **DSST** (Digital Spread Spectrum Technology) and **LAWN** (Local Area Wireless Network.) Harris is also working on one. Actually "wireless" technology is predicted to replace "cable" in everything from telephones to television!

■ **Anticipated spectrum fees and consumer electronics luxury taxes** were absent from the 1991 budget-reduction legislation that Pres. Bush signed last month. Some \$41 billion in savings this fiscal year will in part come from new gasoline and local/long distance telephone excise taxes and spending slashes. FCC was appropriated \$115.8 million for FY 1991.

■ The Canadian Dept. of Communications (DOC) recently sent us a copy of their new RIC-1 (Regulatory Information Circular) entitled **"Guide for Delegated Examiners"** in the Amateur Service.

A fee of \$5 is charged when amateur examinations are administered by DOC radio inspectors but (strangely) "Delegated examiners are free to negotiate any fee

with a candidate, with no remittance to the Department. ...the Dept. will not arbitrate any disputes between the candidate and the delegated examiner." In practice, most delegated examiner testing may be free of any charge.

There are two amateur radio documents in Canada, the lifetime operator certificate and annual station license. An applicant may apply for a station license once the individual passes the Basic qualification. Initial station license fees vary from \$29 to \$8 depending on the month of application. The yearly renewal fee is \$22.

Delegated examiners must hold all qualification levels, i.e. Basic/-Advanced theory and 12 WPM code proficiency. The DOC may authorize any recognized teaching establishment, amateur club or individual to administer any of the four qualification examinations. Educational institutions should offer related training courses in amateur radio. Preference is given to amateur clubs and individuals involved in the training process.

"Individuals will be accredited on a case-by-case basis to conduct examinations in locations where there are no other accredited examiners available."

Institutions, clubs or individuals wishing to become accredited to conduct amateur examinations should submit a written request to the nearest DOC district office. All requests must be signed by school or club administrators; individuals must have their applications co-signed by a local elected or appointed official. All delegated examiners must attend a DOC briefing session with a departmental inspector before being issued a *Letter of Authority* valid for two years.

Candidates who fail the Morse code tests may be retested by approved examiners as often as necessary, at the convenience of

both the examiners and candidates using different code tests

■ **Dick Ross, K2MGA**, of **CQ Communications, Inc.**, published the first issue of **"Communications Quarterly"** magazine on Nov. 26th. The technically oriented publication is edited by **Terry Northrup, KA1TKH**; Associate Publisher, **J. Craig Clark, NX1G**, both of the former **Ham Radio** magazine. The well done *Fall 1990* premier issue contains many articles on the high technology aspects of ham radio.

■ **Two teenage hackers have been arrested for causing more than \$2 million in damages** at 73 Magazine's Peterborough, NH, parent, International Data Group. The 14 and 17 year old brothers accessed IDG's electronic mail, left bomb threats and obscene messages, erased ad insertion orders and destroyed other valuable data. The youths were caught when IDG had AT&T place phone taps on its incoming 800 lines.

■ **Prodigy Services Company**, the interactive personal teletext service of IBM and Sears, recently announced that after the first of the year it will be charging 25 cents each for mail sent between users after the first 30 during any one month. Some unhappy users used the service to initiate an organized electronic mail campaign against Prodigy. They were quickly expelled and four others received stern warnings. Prodigy denies that it has been monitoring the private mail of its subscribers.

■ **MCI Mail recently announced that it will donate as many as 3,000 electronic mail boxes** and underwrite up to \$1 million in usage fees to the International Telecommunication Union (ITU, Geneva) to promote free and open communications between its members.

FCC VOTES NO-CODE THIS THURSDAY!

By the time you read this, the FCC will have decided the fate of the codeless class of license at its December 13, 1990 public meeting. The Amateur Radio world is likely to feel a strong impact from this critical decision, whether from increased involvement in the hobby by newcomers, or from protests by those opposed to no-code ...or to a severely limited no-code license.

Our next issue will include a full account of the FCC meeting. Complete coverage of the Commission's treatment of the Communicator docket must wait until the agency makes available the printed text of its decision, in which it will hopefully explain its reasoning in detail. Depending on the agency's internal workload, release of the full text could take weeks ...or even months. This period is often used to fine-tune the wording in a decision.

The Commission had not revealed exactly what it will decide by the time we went to press. We think that there is a virtual 100% chance that some kind of Communicator license will finally become a reality on that day. If it were to reject Communicator, the FCC would be unlikely to do so at a public meeting. Instead, such rejections are usually accomplished by routine 'circulation' (internal discussion and written voting). There are a few exceptions, such as major frequency allocation votes.

We nervously await the FCC's decision about whether the Communicator will involve deletion of the entry-level amateur licenses -- and if it will permit or prohibit operation on some bands below 222 MHz. Your editor and staff share the views of prominent amateurs who believe that a Communicator that only offers privileges at 222 MHz and up will fail to inspire young and old to enter our hobby ...and could segregate newcomers away from mainstream of amateur radio activity.

Some argue that Communicator privileges must be restricted to encourage upgrading to higher levels of license. Others counter that requiring Morse to operate VHF is a specious "upgrade," and that such an "incentive to upgrade" creates a license so limited in desirability that people must be encouraged to get out of it. Most commenters wanted the present Novice and Technician Class ticket retained. Six amateur classes with Communicator privileges set at 30 MHz and higher,

however, could easily exceed the FCC's resource capability to issue new amateur operator licenses.

In any case, *Petitions for Reconsideration* of the FCC's decision, though inevitable, probably will have little chance of success. *Petitions for Reconsideration* must present new evidence in order to work. The Commission has received massive amounts of input and evidence in thousands of pages of amateur comments in this docket. It's unlikely that any new evidence could be discovered that would change the FCC's mind.

Also on the FCC Dec. 13th Meeting Agenda is a decision on whether to make permanent the current practice of exempting handicapped hams from the 13 and 20 WPM Morse code tests upon presentation of a physician's certification.

FEDERAL COURT RULES FOR FCC ON 220 ISSUE

On November 16th, the American Radio Relay League and FCC lawyers argued the relocation of 220-222 MHz to narrow band business interests in the U.S. Court of Appeals for the District of Columbia. In our December 1st *Report* we said the decision of the three judge panel would be handed down in a few months. The *ARRL* letter of November 29th said the Court's judgement is expected in a few weeks.

Actually it took only a matter of days. On December 3rd, the Court of Appeals denied the League's *Petition for Review* of the Federal Communications Commission's decision to award the 220-222 MHz segment to land mobile users. The court decreed "...the Commission acted within its discretion and [we] the petition for review."

The quickness of the decision ...just three weeks to dispose of a fully briefed and argued matter, clearly indicates the judges found absolutely nothing persuasive to cause them to hesitate longer. The ARRL has seven days to request a re-hearing by the same court or they can ask the Supreme Court to hear the case.

The explanatory memorandum attached to the judgment is informative, but of no precedence value. Notably it says that the FCC cannot now be faulted for relying on information (the Repeater Directory) that came from the League itself. The court was reluctant to agree with ARRL who essentially said the FCC should never have relied on information that came from us.

The seven page *Judgement* said "For several years the Commission allocated the entire 220-225 MHz band to radio amateurs on a co-equal basis with government users and land services. Since the latter groups did not actually use the band, the amateurs enjoyed a *de facto* exclusive use of the 220-225 MHz. band."

"In 1987, the Commission instituted an informal rulemaking directed toward possible reallocation of this part of the spectrum and eventually determined that the 'public convenience, interest, or necessity' standard of 47 U.S.C. §303, which provides the substantive standard for the FCC action, would be best served by allocating three MHz of the spectrum (222-225 MHz) for the exclusive use of the amateur radio operators and two MHz (220-222 MHz) for the exclusive use of the narrow band land mobile users."

The ARRL challenged this decision on three premises; the findings about the current use by the amateurs of 220-222 MHz frequencies, the need of the land mobile communication systems users who are developing narrow band technologies to use these frequencies, and the value attached by the Commission to competing uses.

Underestimated amateur use

The court said the principal current users of the 220-225 MHz frequencies are packet stations, repeaters, control links and various experimental operations. "The Commission determined that most of the repeaters are in the 222-225 range and that other amateur users could move to either 222-225 MHz or to the other parts of the spectrum reserved for the amateurs, especially if the amateurs employ means for minimizing spectrum usage such as sharing control links."

The League charged that "...the FCC ignored the possibility that more amateurs actually use the frequencies than the Commission believed. In particular, [ARRL] attacks the Commission's conclusion that packet station usage is light in the 220-222 MHz band as based on inadequate information."

The court said they "... believe the FCC acted on the basis of all information available to it about the extent and the nature of amateur use on 220-222 MHz and it reasonably considered the difficulties involved in the amateurs' relocation to differ-

ent bands and, therefore, reject this contention.

"It is important to recognize that the Commission does not regulate amateurs beyond issuing general licenses and, therefore, cannot know the extent of amateurs' use of different frequencies unless voluntary amateur organizations, such as the ARRL, provide data about the extent of amateurs' use. In this case, the Commission relied on the Repeater Directory published by petitioner and on petitioner's research to estimate the number of users.

"Ironically, the ARRL now claims that its own information was inadequate and does not represent the full extent of amateur use. ...we cannot fault the commission for its reliance upon the information the petitioner itself submitted."

The court also said "...the FCC adequately explained why ...an allocation to the land mobile users was desirable. The Commission believed that spectrum efficient technologies will be essential in addressing this country's future land mobile requirements and, therefore, wants to encourage these users to develop narrow band technologies."

The court said they must go along with the FCC view that "...the obstacles to the development of narrow band technologies in the parts of the spectrum currently allocated to the land mobile systems are too great. The Commission believes that only in the part of the spectrum currently unoccupied by the wide band users can narrow band technologies be developed to the point that would allow their subsequent use at all frequencies."

In addressing the issue of the FCC's determination that narrow band technology had the potential to reduce spectrum shortages, the court agreed that it is the FCC's responsibility "...to balance the respective uses to which the wavelengths can be dedicated. We must defer to the Commission's reasonable assessment of the probable future success and importance of technological developments. These determinations are based on a close acquaintance with the technical, economic and other aspects of the competing technologies, and we cannot say that the Commission did not arrive at a reasoned decision about the best way to advance the *public convenience, interest, or necessity*."

(Case No. 89-1602, U.S. Court of Appeals, filed Dec. 3, 1990)